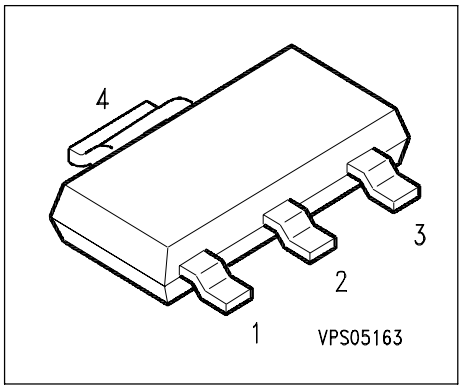
NPN Silicon RF Transistor

- For low noise, low distortion broadband amplifiers in antenna and telecommunications systems up to 1.5GHz at collector currents from 20mA to 80mA
- Power amplifier for DECT and PCN systems
- f_T = 7.5GHz
  F = 1.5 dB at 900MHz



ESD: **E**lectro**s**tatic **d**ischarge sensitive device, observe handling precaution!

Type	Marking	Ordering Code	Pin Configuration				Package
BFG 196	BFG196	Q62702-F1292	1 = E	2 = B	3 = E	4 = C	SOT-223

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CEO}	12	V
Collector-emitter voltage	V_{CES}	20	
Collector-base voltage	V_{CBO}	20	
Emitter-base voltage	V_{EBO}	2	
Collector current	I_C	100	mA
Base current	I_B	12	
Total power dissipation $T_S \leq 90$ °C	P_{tot}	800	mW
Junction temperature	T_j	150	°C
Ambient temperature	T_A	- 65 ... + 150	
Storage temperature	T_{stg}	- 65 ... + 150	
Thermal Resistance			
Junction - soldering point [1)]	R_{thJS}	≤ 75	K/W

1) T_S is measured on the collector lead at the soldering point to the pcb.

Electrical Characteristics at T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage I_C = 1 mA, I_B = 0	$V_{(BR)CEO}$	12	-	-	V
Collector-emitter cutoff current V_{CE} = 20 V, V_{BE} = 0	I_{CES}	-	-	100	µA
Collector-base cutoff current V_{CB} = 10 V, I_E = 0	I_{CBO}	-	-	100	nA
Emitter-base cutoff current V_{EB} = 1 V, I_C = 0	I_{EBO}	-	-	1	µA
DC current gain I_C = 50 mA, V_{CE} = 8 V	h_{FE}	50	100	200	-

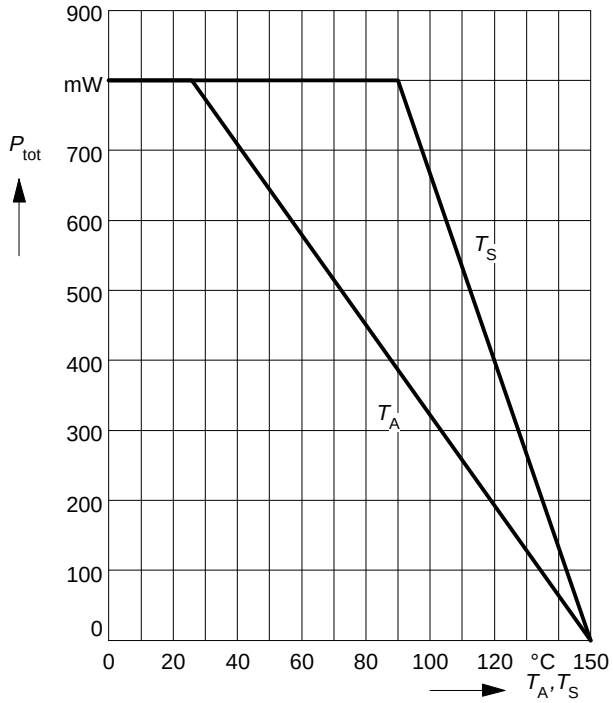
Electrical Characteristics at T_A = 25°C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Transition frequency I_C = 70 mA, V_{CE} = 8 V, f = 500 MHz	f_T	 5	 7.5	 -	GHz
Collector-base capacitance V_{CB} = 10 V, f = 1 MHz	C_{cb}	 -	 0.97	 1.4	pF
Collector-emitter capacitance V_{CE} = 10 V, f = 1 MHz	C_{ce}	 -	 0.4	 -	
Emitter-base capacitance V_{EB} = 0.5 V, f = 1 MHz	C_{eb}	 -	 4	 -	
Noise figure I_C = 20 mA, V_{CE} = 8 V, Z_S = Z_{Sopt} f = 900 MHz f = 1.8 GHz	F	 - -	 1.5 2.5	 - -	dB
Power gain [2)] I_C = 50 mA, V_{CE} = 8 V, Z_S = Z_{Sopt} Z_L = Z_{Lopt} f = 900 MHz f = 1.8 GHz	G_{ma}	 - -	 14 8.5	 - -	
Transducer gain I_C = 50 mA, V_{CE} = 8 V, Z_S =Z_L= 50 Ω f = 900 MHz f = 1.8 GHz	$\lvert S_{21e}\rvert^2$	 - -	 11.5 6	 - -	

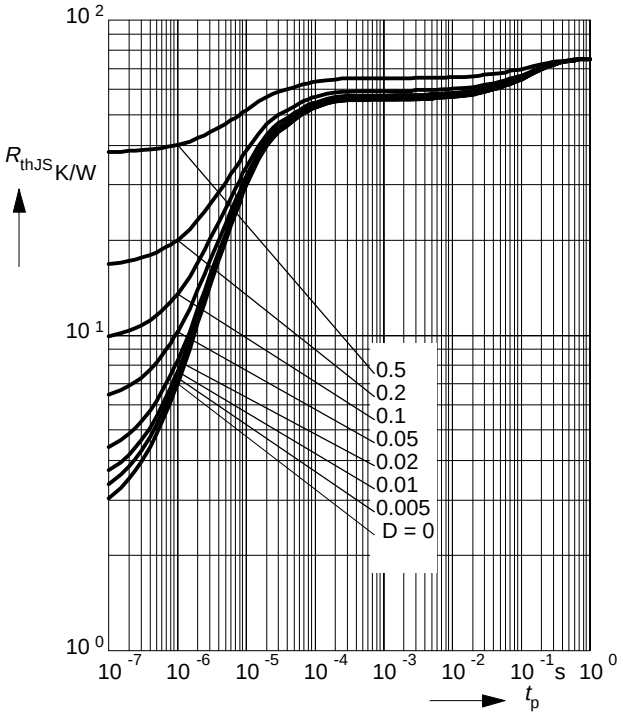
2) $G_{ma} = |S_{21}/S_{12}| (k-(k^2-1)^{1/2})$

Total power dissipation $P_{tot} = f(T_A^*, T_S)$

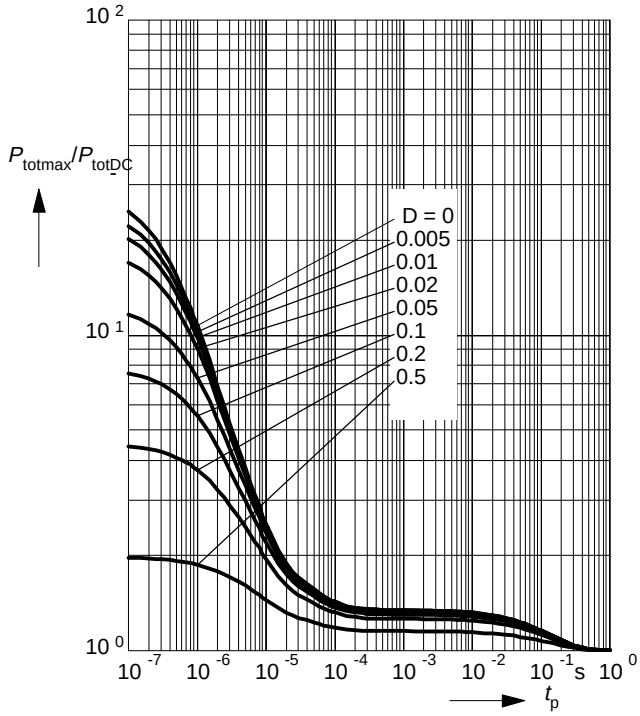
* Package mounted on epoxy



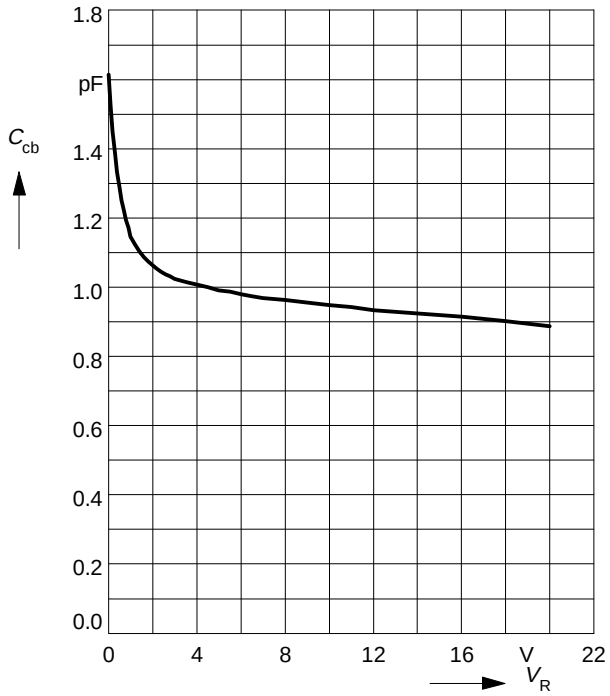
Permissible Pulse Load $R_{thJS} = f(t_p)$



Permissible Pulse Load $P_{totmax}/P_{totDC} = f(t_p)$

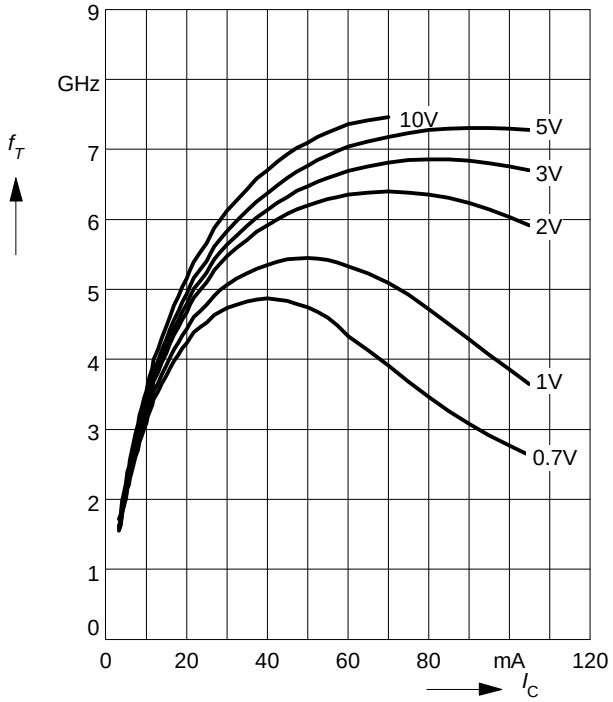


Collector-base capacitance $C_{cb} = f(V_{CB})$
$V_{BE} = v_{be} = 0$, $f = 1$MHz

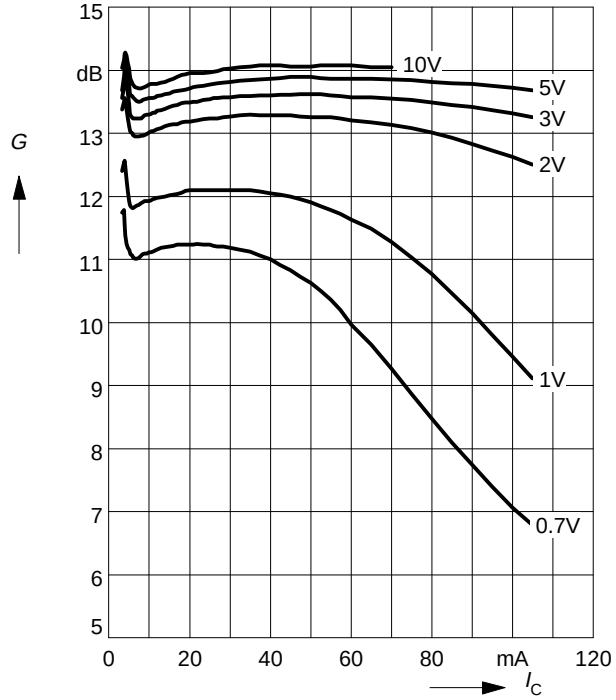


Transition frequency $f_T = f(I_C)$

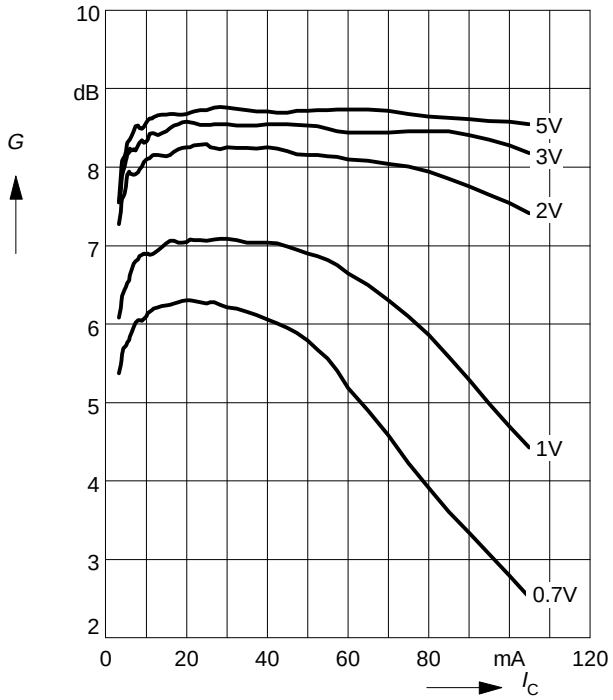
V_{CE} = Parameter



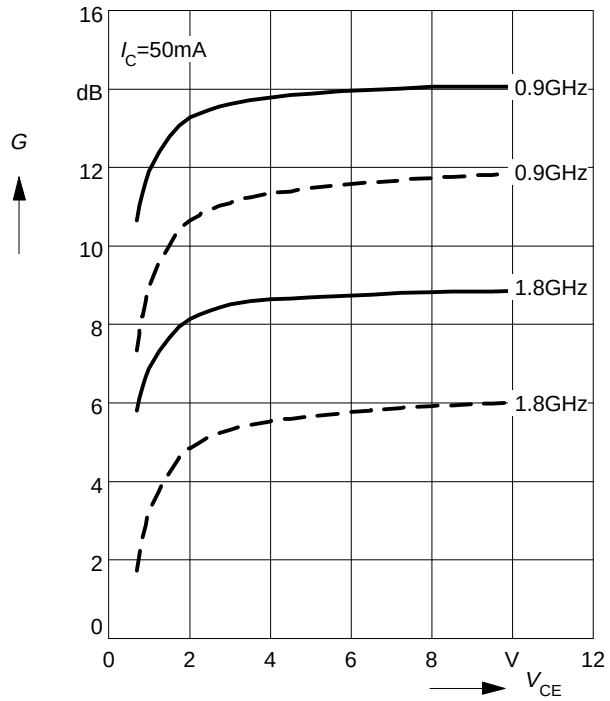
Power Gain G_{ma}, $G_{ms} = f(I_C)$
$f = 0.9$GHz
V_{CE} = Parameter



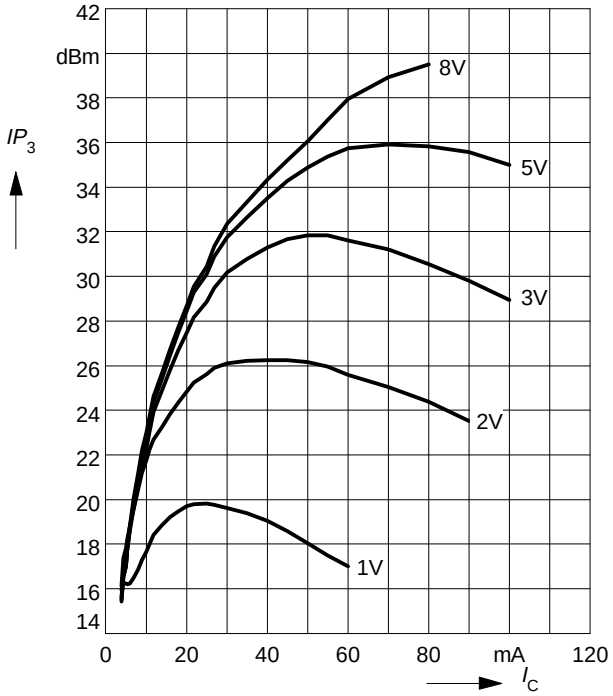
Power Gain G_{ma}, $G_{ms} = f(I_C)$
$f = 1.8$GHz
V_{CE} = Parameter



Power Gain G_{ma}, G_{ms} = $f(V_{CE})$:_____
$|S_{21}|^2$ = $f(V_{CE})$:---------
f = Parameter

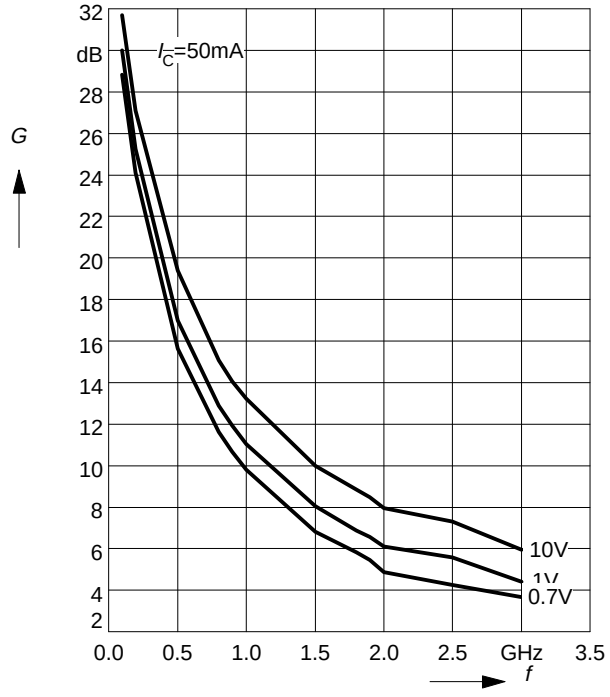


Intermodulation Intercept Point IP_3=$f(I_C)$
(3rd order, Output, Z_S=Z_L=50Ω)
V_{CE} = Parameter, f = 900MHz



Power Gain G_{ma}, G_{ms} = $f(f)$

V_{CE} = Parameter



Power Gain $|S_{21}|^2$= $f(f)$

V_{CE} = Parameter

